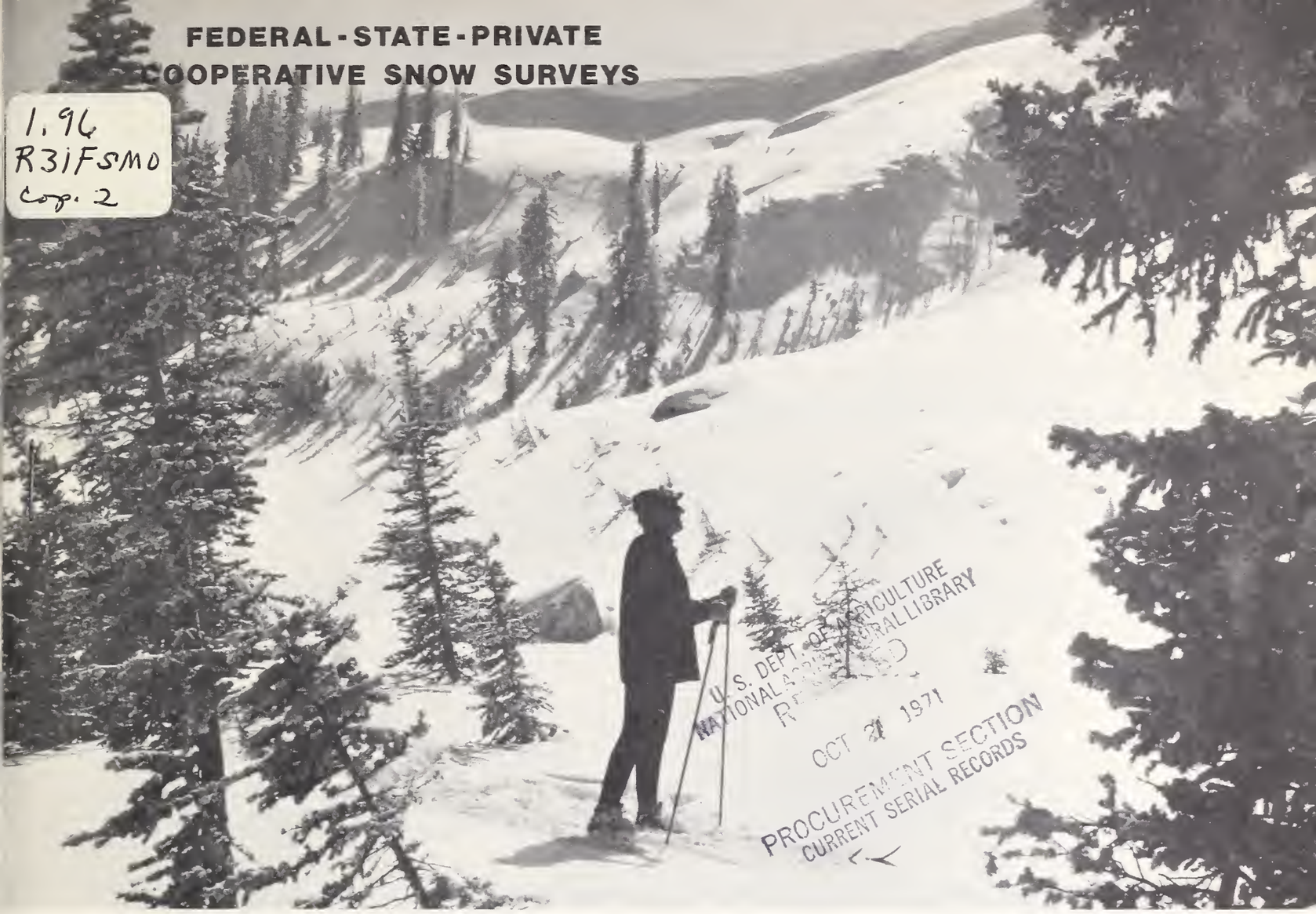

WATER SUPPLY OUTLOOK FOR MONTANA

Prepared by

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF
FEB. 1, 1971

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbis Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters of key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia

USDA SCS PORTLAND, OREG 1970

WATER SUPPLY OUTLOOK FOR MONTANA

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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In Cooperation with

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and

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SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

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MONTANA WATER SUPPLY OUTLOOK
February 1, 1971

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* * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                 *
* The January mountain snowfall was above average *
* over the entire state.  Many snow courses are   *
* near or above their April 1 average.            *
*                                                 *
* Soil moisture is above average.                 *
*                                                 *
* * * * * * * * * * * * * * * * * * * * * * * * * *
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COLUMBIA RIVER DRAINAGE

Snow - The mountain snow pack is above average in all drainages with the exception of the Kootenai River headwaters. The snow cover is about 150 to 200 percent of last year.

Soil moisture is average to above average.

Streamflow - Forecasts will be released on March 1. With the present snow measurements and soil moisture conditions it is expected that streamflow will be near average in the Kootenai, 20 to 30 percent above average in the Bitterroot and Clark Fork, and 10 to 20 percent above average in the Flathead drainages.

MISSOURI RIVER DRAINAGE

Snow - The snow pack is record or near record in the southwest drainages, and is above average over the remaining mountainous areas. Mild temperatures and precipitation the latter part of January caused some lower elevations to bare and an increase in streamflow.

Lower elevation snow courses showed slight decreases in water equivalent, but losses were replaced soon thereafter with snowfall.

Valley soils are saturated in the southwest portion of Montana. Soils beneath the snow pack are generally wetter than normal.

Streamflow - Forecasts will be released on March 1. With the present snow pack and soil moisture conditions, it is expected forecasts will be around 120 to 150 percent average in the southwest, and 110 to 120 percent average along streams tributary to the Missouri.

YELLOWSTONE RIVER DRAINAGE

Snow - The snow pack is above average in the Yellowstone headwaters, and near average in the Red Lodge area. The little Bighorn drainage has above average mountain snow pack.

Soil moisture is generally near average.

Streamflow - Forecasts will be released on March 1. It is expected that most forecasts will be 110 to 120 percent average, if present mountain precipitation patterns continue.

SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF:	
		Last Year	Average
COLUMBIA RIVER DRAINAGE			
Kootenai	8	170	104
Flathead	3	185	135
Clark Fork	13	142	136
Bitterroot	2	215	152
MISSOURI RIVER DRAINAGE			
Jefferson	7	182	173
Madison	12	143	154
Gallatin	11	99	145
Missouri Main Stem	4	150	120
YELLOWSTONE RIVER DRAINAGE			
Yellowstone	7	137	137
Little Big Horn	7	84	120

SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average +
COLUMBIA RIVER BASIN							
Kootenai							
Baree Trail	3800	48	7.5	2/01	6.6	-	-
Murphy Lake R. S.	3000	48	22.6	1/26	19.3	19.1	19.5
Raven R. S.	3050	48	23.0			18.9	-
Flathead							
Desert Mountain	5600	54	8.4	1/29	7.0	6.4	7.0
Marias Pass	5250	54	6.5	1/30	4.8	4.6	5.1
Clark Fork							
Black Pine	7100	48	10.0	1/28	7.6	7.2	7.4
Lubrecht Forest	4100	48	26.8	1/31	15.8	-	-
Seeley Lake R. S.	4030	48	11.9	2/01	11.6	5.2	7.4
Skalkaho Summit	7260	48	10.8			-	-
Bitterroot							
Gibbons Pass	7100	48	7.1	2/01	6.0	3.3	5.3
Lolo Pass	5250	48	10.6	1/27	6.1	5.1	6.4
MISSOURI RIVER BASIN							
Beaverhead							
Lakeview	6700	48	15.3	2/01	6.4	5.7	6.8
Madison							
West Yellowstone	6700	48	6.5	1/29	2.9	2.0	2.7
Gallatin							
Bridger Bowl	7250	48	17.0	1/27	16.4	16.7	15.6
College Site #2	4860	48	17.7	1/29	15.6	15.9	12.4
Lick Creek	6860	48	18.8	1/28	17.4	17.1	17.4
Twenty-One Mile	7150	48	10.0	1/29	5.6	6.5	4.1
Missouri Main Stem							
Kings Hill	7420	48	11.8	1/29	5.0	6.3	6.8
Stemple Pass	6350	48	5.9	2/01	4.0	3.3	4.0
Milk							
Beaver Creek	3950	48	20.9	2/03	6.7	9.4	-
Rocky Boy	3950	36	10.1	2/03	7.2	6.8	-
Yellowstone							
Battle Ridge	6020	48	17.6	1/27	15.9	12.7	13.2
Northeast Entrance	7350	48	9.4			4.9	6.7

+ Average for period of record.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA RIVER BASIN					
Flathead	Hungry Horse	3,428.0	1,980.0	2,026.0	2,474.0
	Flathead Lake	1,791.0	1,150.0	1,067.0	1,186.0
	Camas (4)	45.2	18.3	18.1	26.6
	Mission Valley (8)	100.3	35.2	24.6	31.0
Clark Fork	Georgetown Lake	31.0	27.8	27.4	25.1
	Noxon Rapids	334.6	332.1	320.0	320.2
Bitterroot	Como	34.9	10.1	8.9	9.3
	Painted Rocks	31.7	22.3	21.0	21.7
	Nevada Creek	12.6	5.3	-	4.4
MISSOURI RIVER BASIN					
Beaverhead	Clark Canyon	328.9	139.5	141.9	126.5
	Lima	84.0	41.9	50.6	22.8
Ruby	Ruby	38.8	27.2	29.6	21.1
Madison	Hebgen Lake	377.5	266.5	266.4	168.7
	Ennis Lake	41.0	36.1	34.8	38.4
Gallatin	Middle Creek	8.0	4.0	3.8	3.3
Missouri	Canyon Ferry	2,043.0	1,613.0	1,677.0	1,602.0
	Hauser & Helena	61.9	63.6	60.7	56.5
	Lake Helena	10.4	11.1	10.0	8.6
	Holter Lake	81.9	79.6	81.8	61.5
	Smith River	10.7		4.9	5.7
	Durand	7.0		3.2	4.0
	Martinsdale	23.1		4.8	6.3
	Deadman's Basin	72.2		28.9	42.2
	Fort Peck	19,410.0	16,280.0	16,340.0	10,930.0
Sun	Gibson	105.0	24.8	16.7	47.0
	Willow Creek	32.3	21.6	17.9	20.4
	Pishkun	32.0	17.4	17.4	17.9
Marias	Lower Two Medicine	16.6		5.0	0.0
	Four Horns	19.2		12.7	12.1
	Swift	30.0	15.0	15.5	17.8
	Lake Frances	112.0	85.8	82.6	83.3
	Tiber	1,347.0	460.4	538.4	625.5
Milk	Fresno	127.2	61.8	89.7	59.6
	Nelson	66.8		47.5	42.4
	Lake Sherburne	66.1		16.2	17.9
Yellowstone	Mystic Lake	20.8	8.8	8.5	10.4
	Tongue River	68.0		27.4	19.9
	Cooney	27.5	13.3	13.3	13.0
Big Horn	Big Horn Lake	1,356.0	916.9	693.2	723.0

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
COLUMBIA RIVER BASIN						
KOOTENAI RIVER						
Baree Creek	5500	2/01	99	37.0	-	-
Baree Midway	4600	2/01	79	30.9	-	-
Baree Trail	3800	2/01	30	9.0	-	-
Fernie	3500	2/01	26	7.3	-	7.1
Field	4200	1/30	28	3.9	3.2	5.5
Glacier	4100				14.3	20.5
Gray Creek	5100	1/31	59	11.2	7.0	12.4
Kicking Horse	5400	1/29	48	9.1	7.0	11.4
Marble Canyon	5000	1/30	52	10.5	5.1	10.6
Morrissey Ridge	6100				12.7	20.0
New Fernie	4100	2/01	41	14.0	-	11.1
Sinclair Pass	4500	1/30	26	4.2	2.9	4.7
Sullivan Mine	5100	1/28	52	15.0	6.6	9.7
FLATHEAD RIVER						
Desert Mountain	5600	1/29	48	15.0	8.9	10.7
Hell Roaring Divide	5770	1/28	82	27.2	13.9	22.3
Holbrook	4530				7.0A	7.4
Marias Pass	5250	1/26	69	18.9	10.2	12.1
Spotted Bear Mountain	7000				10.0A	10.1
Twin Creeks	3580				8.5A	8.7
CLARK FORK RIVER						
Black Pine	7100	1/28	40	12.0	7.8	8.8
Black Pine Pillow	7100	1/28	SP	10.9	7.9	8.8
Combination	5600	1/28	16	3.8	2.9	-
Coyote Hill	4200	2/01	31	10.1	7.8	7.8
Fred Burr Pass	8000	1/28	69	21.9	-	-
Heart Lake Trail	4800	1/28	78	26.2	12.8	-
Hoodoo Basin	6000	1/28	139	48.3	33.1	-
Hoodoo Basin Pillow	6000	1/31	SP	46.6	32.6	-
Hoodoo Creek	5900	1/28	136	47.0	31.8	32.0
Intergaard	6450	2/01	22	6.0	3.9	5.3
Lookout	5250	1/28	109	36.1	24.5	25.0
Lubrecht Flume	4800	1/26	25	5.9	-	-
Lubrecht Forest No. 3	5450	1/30	23	6.1	4.7	5.2
Lubrecht Forest No. 4	4650	1/29	13	3.2	-	2.7
Lubrecht Forest No. 6	4040	1/28	14	3.5	3.4	3.3
Lubrecht Hydroplot	4200	1/26	22	5.1	-	-

A - Aerial observation - water content only.
SP - Snow pillow observation - water content only.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
CLARK FORK RIVER (continued)						
North Fork Elk Creek	6250	1/29	38	9.8	-	-
North Fork Elk Creek Pillow	6500	1/29	SP	9.9	6.1	-
Peterson Meadows	7200	1/29	31	8.8	-	-
Red Lion	7100	1/28	49	12.4	-	-
Southern Cross	6500	2/01	10	3.5	2.9	4.4
Storm Lake	7780	1/29	40	12.3	8.6	8.5
Stuart Mill	6500	2/01	13	3.7	3.2	4.5
TV Mountain	6800	2/01	56	19.3	13.6	11.8
BITTERROOT RIVER						
Gibbons Pass	7100	2/01	65	22.2	15.1	15.1
Lolo Pass	5230	1/26	102	26.6	20.5	-
Moose Creek	6200	1/29	61	18.2	3.7	10.9
Saddle Mountain	7940	2/01	71	24.0	17.2	-
Saddle Mountain Pillow	7900	2/01	SP	24.9	17.8	-
Savage Pass	6600	1/27	79	23.4	15.8	-
Twelvemile Creek	5600	2/02	55	21.0	16.6	-
Twelvemile Creek Pillow	5600				12.9	-

SP - Snow pillow observation - water content only.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
MISSOURI RIVER BASIN						
BEAVERHEAD RIVER						
Camp Creek	6800	1/27	43	12.9	6.2	6.3
Carter Creek	7400	1/31	18	4.0	4.2	2.8
Kilgore	6200	1/28	43	14.2	9.8	6.2
Lakeview Canyon	6930	2/01	45	15.3	5.6	8.3
Lakeview Ridge	7400	2/01	38	13.4	5.5	7.7
Sawtelle Mountain	8715	1/28	100	36.0	23.8	-
JEFFERSON RIVER						
Copper Mountain	7700	1/31	30	8.0	6.1	-
Nez Perce Creek	6500	1/31	12	3.3	3.3	-
Picnic Grounds	6500	2/01	10	2.4	2.3	3.1
Pipestone Pass	7200	1/27	16	3.5	2.5	3.4
Rocker Peak	8000	1/29	50	14.0	10.0	-
Rocker Peak Pillow	8000	1/29	SP	13.0	9.8	-
Uncle Sam Gulch	6500	1/29	28	7.6	4.7	-
MADISON RIVER						
Big Springs	6500	1/28	68	22.3	16.3	13.1
Black Canyon	7850	1/28	95	32.0	22.8	23.1
Black Moose	8125	1/28	110	40.8	27.8	26.8
Hebgen Dam	6550	1/29	41	10.0	9.1	7.5
Island Park	6315	1/28	60	18.2	12.6	10.6
Lake Creek	6100	1/27	34	8.4	5.4	-
Latham Springs	7650	1/28	95	34.4	23.2	22.4
Lion Mountain	8760	1/25	61	17.8	12.8	-
Lucky Dog	6900	1/28	78	27.6	19.4	16.8
Meridian Creek	7000	1/27	40	11.0	5.8	-
Norris Basin	7500	2/01	40	11.1	7.5	7.2
Old Road	7250	1/28	86	30.4	21.6	17.5
Poachers Cabin	8000	1/28	83	28.4	23.2	23.8
Soap Bogus Divide	7600	1/27	46	13.4	9.5	-
Targhee Pass	7000	1/28	53	16.3	8.2	-
Tepee Creek	8000	1/27	59	17.6	11.0	-
Valley View	6500	1/28	55	17.9	8.6	10.3
West Yellowstone	6700	1/30	46	13.3	8.4	7.4
West Yellowstone Pillow	6700	2/03	SP	9.6	5.2	-

SP - Snow pillow observation - water content only.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1968 M-4240

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
ST. MARY RIVER						
Hudson Bay Divide	5800	1/28	64	16.6	8.6	-
GALLATIN RIVER						
Arch Falls	7350	1/28	36	10.2	11.6	7.5
Bridger Bowl	7250	1/27	76	27.4	25.5	16.1
Bridger Bowl Pillow	7250	1/27	SP	25.2	24.3	15.6
Devils Slide	8100	1/28	57	18.2	19.6	13.2
Hood Meadow	6600	1/28	33	9.1	11.9	6.5
Lick Creek	6860	1/28	29	7.4	9.6	6.3
Lick Creek Pillow	6860	1/28	SP	8.0	8.2	5.7
Maynard Creek	6210	1/27	50	16.5	16.4	-
Maynard Creek Pillow	6210	1/27	SP	10.6	12.8	-
New World	6700	1/27	30	8.7	10.2	6.4
Shower Falls	8100	1/28	62	21.5	23.2	16.0
Shower Falls Pillow	8100	1/28	SP	18.2	20.6	14.1
Twenty-One Mile	7150	1/29	62	19.1	11.4	11.9
MISSOURI RIVER (Main Stem)						
Bear Paw Ski Area	5200				6.4	-
Chessman Reservoir	6200	2/02	8	2.7	1.8	2.6
Deadman Creek	6450	1/29	35	8.4	-	-
Rocky Boy	4700				3.4	-
Rocky Boy Pillow	4700				3.3	-
Ten Mile Lower	6600	2/02	16	4.3	3.1	4.6
Ten Mile Middle	6800	2/01	31	8.8	5.4	6.9
Ten Mile Upper	8000	2/01	38	11.7	8.1	8.8
JUDITH RIVER						
Spur Park	8000	1/29	58	17.0	-	-
SUN-TETON-MARIAS RIVERS						
Badger Pass	6900				25.0A	-
Blue Lake	5900				12.5A	-

A - Aerial observation - water content only.
SP - Snow pillow observation - water content only.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1980 M-4240

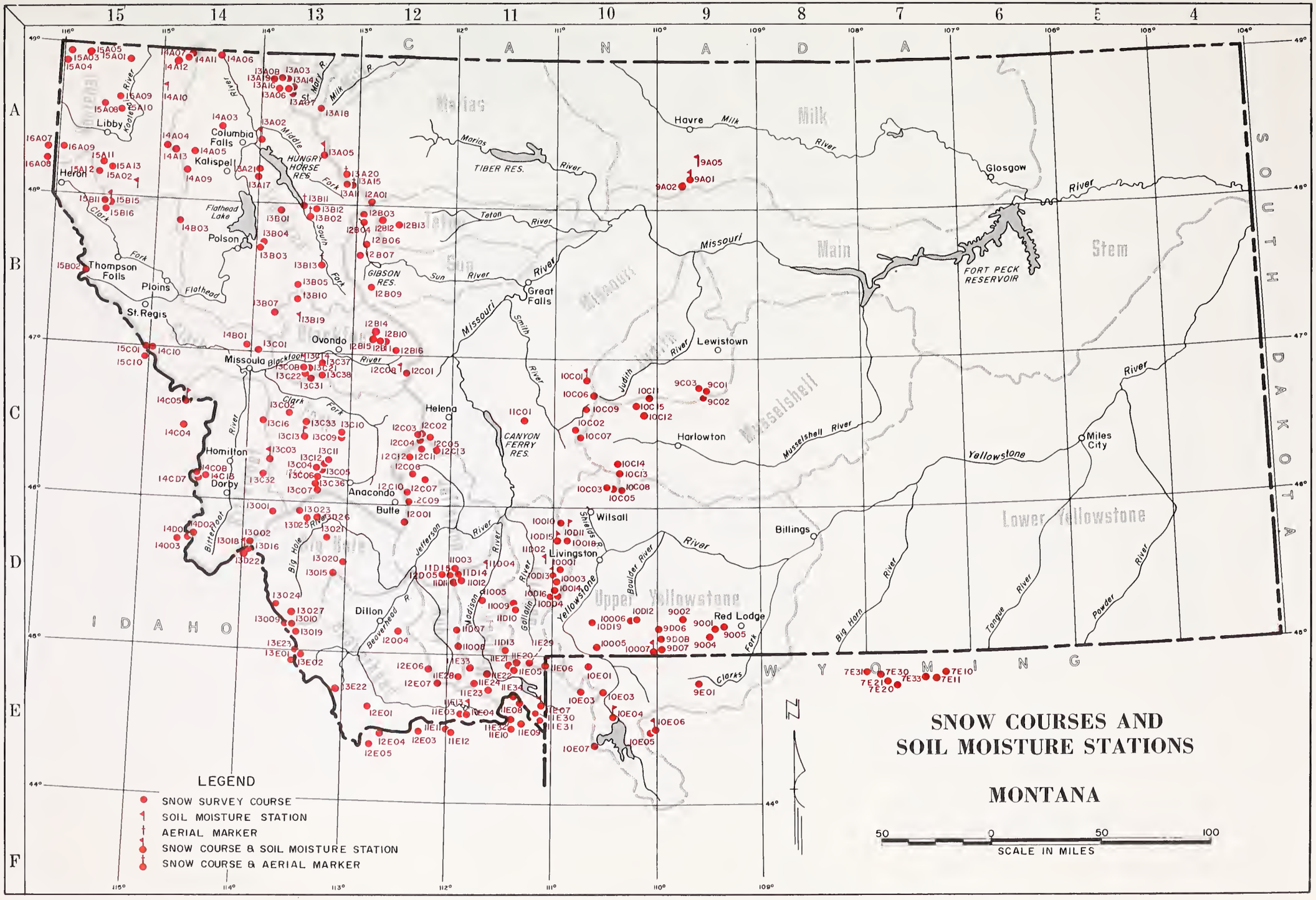
SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
SASKATCHEWAN (BOW) RIVER						
Bow River #1	5100	1/28	32	7.1	3.1	-
Chateau Lawn #8	5700	1/28	39	8.9	4.8	-
Mirror Lake #6	6600	1/28	35	8.4	5.3	-
Mount Eisenhower #10	5000	1/29	27	4.9	2.5	-
Upper Pipestone #2	5300	1/29	36	7.1	3.5	-
UPPER YELLOWSTONE						
Canyon	7750	1/31	55	14.6	-	10.1
Grizzly Peak	8400	2/01	37	10.2	10.4	10.1
Lake Camp	7850	1/31	38	9.7	-	5.9
Lodgepole	8200	Not Measured			7.0	6.9
Lupine	7300	2/01	36	10.8	-	7.1
Northeast Entrance	7400	2/02	29	7.1	8.4	6.0
Northeast Entrance Pillow	7400				8.4	-
Sylvan Pass	7100	2/01	36	11.3	8.9	8.8
Thumb Divide	7900	1/28	73	23.3	12.3	14.6
West Rosebud	7500				5.3	-

SP - Snow pillow observation - water content only.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4840



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE GPO:1959-MONTANA, 0466 1959 M-4473

INDEX to MONTANA SNOW COURSES and SOIL MOISTURE STATIONS

SNOW COURSES

Drainage Basin & Snow Course	Number	Elev	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
[illegible] Eagle Peak	15A18	5700	6	27N	31W	1969	3,4,5,5½,6	1
[illegible]	[illegible]	5600	4	32N	30W	1969	2,3,4,5,5½,6	1
[illegible] Creek	[illegible]	[illegible]	36	26N	31W	1956	3,4,5,5½	2
[illegible]	[illegible]	[illegible]	31	26N	30W	1966	3,4,5,5½	2
[illegible] Peak	15A15	3800	5	25N	30W	1965	3,4,5,5½	2
[illegible] Creek	15A10	3900	2	32N	30W	1969	2,3,4,5,5½,6	1
[illegible] Creek	14A04	5100	12	30N	26W	1937	3,4,5	1,2
[illegible] Creek Timber	[illegible]	5000	12	30N	26W	1969	3,4,5	1,2
[illegible] Drive	[illegible]	4100	35	28N	31W	1969	2,3,4,5,5½,6	1
[illegible] Creek	[illegible]	5400	20	37N	33W	1969	2,3,4,5,5½,6	1
Carver Creek	15A05	4250	8	37N	32W	1969	2,3,4,5,5½,6	1
[illegible] Creek	14A11	4300	1	36N	25W	1937	3,4,5,5½,6	1
[illegible] Lake	15A03	6450	18	37N	33W	1969	2,3,4,5,5½,6	1
Keeler Creek	16A09	3300	25	30N	35W	1969	3,4,5	1
[illegible]	15A09	4800	31	33N	29W	1969	2,3,4,5,5½,6	1
Thomas Creek	15A12	5100	5	27N	31W	1969	2,3,4,5,5½,6	1
Red Mountain	15A01	6000	4	36N	29W	1937	3,4,5,5½,6	2
Stahl Peak	14A12	6050	5	36N	25W	1969	3,4,5,5½,6	1
Weasel Divide	14A07	5450	20	37N	24W	1937	3,4,5,5½,6	1
FLATHEAD RIVER								
Bassoon Peak	14B03	5150	11	24N	25W	1961	3,4,5	1,5
Beaver Lake	13A11	5900	31	28N	11W	1964	3,4,5	1
Big Creek	13B03	6750	7	22N	18W	1941	3,4,5, 6	1,5
Camp Misery	13A17	6400	30	28N	18W	1962	3,4,5	1,2
Desert Mountain	13A02	5600	24	31N	19W	1937	1,2,3,4,5, 6	1,2
Fatty Creek	13B04	5500	8	22N	18W	1962	3,4,5, 6	1,5
Flattop Mountain	13A19	6300	12	35N	18W	1968	4	1,6
Griffin Creek Divide	14A09	5150	11	28N	25W	1960	3,4,5	1,5
Gunsight Lake	13B12	6300	35	26N	14W	1964	3,4,5	1
Hell Roaring Divide	14A03	5770	35	32N	22W	1942	1,2,3,4,5,5½,6	2
Holbrook	13B13	4530	18	21N	13W	1951	1,2,3,4,5	1
Kishenehn	14A06	3890	14	37N	22W	1954	3,4	6
Logan Creek	14A05	4300	34	30N	24W	1937	3,4,5	1,2
Marias Pass	13A05	5250	34	30N	14W	1934	1,2,3,4,5	3
Mineral Creek	13A16	4000	29	35N	17W	1957	3,4,5	6
Noisy Creek	13A21	3600	35	28N	19W	1970	3,4,5	1,2
North Fork Jocko	13B07	6330	3	17N	17W	1941	3,4,5,5½,6	1,5
Spotted Bear Mountain	13B02	7000	23	25N	15W	1948	1,2,3,4,5	1
Trinkus Lake	13B01	6100	9	25N	17W	1948	3,4,5	1
Twin Creeks	13B11	3580	24	26N	16W	1951	1,2,3,4,5	1
Upper Holland Lake	13B05	6200	28	20N	15W	1948	3,4,5	1
CLARK FORK RIVER								
Black Pine	13C13	7100	26	8N	15W	1959	1,2,3,4,5,5½,6	1
Combination	13C33	5600	7	8N	14W	1971	1,2,3,4,5	1
Copper Bottom	12B16	5200	15	15N	8W	1971	1,2,3,4,5	1,2
Copper Camp	12B14	6950	3	15N	9W	1971	1,2,3,4,5	1,2
Copper Creek	12B10	5700	1	15N	9W	1962	3,4,5	1,2
Copper Lake Creek	12B15	6100	3	15N	9W	1971	1,2,3,4,5	1,2
Cotter Mine	12B11	6250	2	15N	9W	1962	3,4,5	1,2
Coyote Hill	13B10	4200	12	18N	16W	1947	1,2,3,4,5	1,2
El Dorado Mine	13C09	7800	23	8N	12W	1949	3,4	1
Fred Burr Pass	13C11	8000	12	6N	13W	1957	3,4,5	1
Gold Creek Lake	13C10	7200	14	8N	12W	1949	3,4	1
Heart Lake Trail	14C10	4800	11	14N	27W	1965	1,2,3,4,5,5½,6	1,2
Hoodoo Basin	15C10	6000	17	14N	27W	1967	1,2,3,4,5,5½,6	1,2
Hoodoo Creek	15C01	5900	16	14N	27W	1937	1,2,3,4,5,5½,6	1,2
Intergaard	13C04	6450	6	5N	13W	1936	2,3,4,5	4
Lubrecht Flume	13C38	4800	13	13N	14W	1971	1,2,3,4,5	8
Lubrecht Forest No. 3	13C21	5450	19	13N	14W	1951	1,2,3,4,5	8
Lubrecht Forest No. 4	13C22	4650	23	13N	15W	1951	1,2,3,4,5	8
Lubrecht Forest No. 6	13C08	4040	11	13N	15W	1951	1,2,3,4,5	8
Lubrecht Hydroplot	13C37	4200	22	13N	14W	1971	1,2,3,4,5	8
North Fork Elk Creek	13C31	6250	20	13N	13W	1968	1,2,3,4,5,5½,6	8
Peterson Meadows	13C36	7200	2	4N	14W	1971	1,2,3,4,5	2
Red Lion	13C12	7100	22	6N	13W	1958	3,4,5	1
Skalkaho Summit	13C03	7260	30	6N	17W	1937	3,4,5,5½,6	1
Slide Rock Mountain	13C02	7100	35	10N	16W	1937	3,4,5	1
Southern Cross	13C05	6500	8	5N	13W	1936	2,3,4	4
Storm Lake	13C07	7780	19	4N	13W	1939	1,2,3,4,5	1
Stuart Mill	13C06	6500	19	5N	13W	1936	2,3,4	4
Stuart Mountain	13C01	7400	6	14N	18W	1936	1,2,3,4,5,5½,6	8
TV Mountain	14B01	6800	33	15N	19W	1956	1,2,3,4,5,5½,6	8
BITTERROOT RIVER								
Ambrose	13C16	6480	28	9N	18W	1960	3,4,5	1
Coyote Meadows Trail	13C32	7000	20	4N	18W	1969	3,4,5	1
East Fork R.S.	13D01	5400	16	2N	17W	1937	3,4	1
Gibbons Pass	13D02	7100	4	2S	19W	1934	1,2,3,4,5,5½,6	1,3
Lost Horse	14C07	5940	5	4N	23W	1960	3,4,5,5½,6	1
Nez Perce Camp	14D02	5580	19	1S	23W	1937	3,4,5	1
Nez Perce Pass	14D01	6570	25	1S	24W	1937	3,4,5	1
Saddle Mountain	13D22	7940	5	2S	19W	1965	1,2,3,4,5,5½,6	1
Twelvemile Creek	14C13	5600	34	5N	23W	1968	1,2,3,4,5,5½,6	1
Twin Lakes	14C08	6510	32	5N	23W	1960	1,2,3,4,5,5½,6	1
ST. MARY RIVER BASIN								
Hudson Bay Divide	13A18	5800	24	34N	14W	1962	3,4,5	3
Iceberg Lake No. 3	13A03	5600	1	35N	17W	1922	5	3,9
Josephine Lower No. 9	13A14	4900	22	35N	16W	1955	5	3,9
Mount Allen No. 7	13A07	5700	27	35N	16W	1922	5	3,9
Piegan Pass No. 6	13A06	5500	27	35N	16W	1922	5	3,9
Ptarmigan No. 8	13A08	5800	36	36N	17W	1937	5	3,9
MISSOURI RIVER BASIN								
BEAVERHEAD RIVER								
Blood Dick	13D10	7600	12	8S	16W	1948	3,4,5	1
Carter Creek	12D04	6400	22	8S	7W	1963	2,3,4	11
Dead Creek Lake	11E22	6400	4	12S	13W	1965	3,4,5	1
Elk River Springs	[illegible]	[illegible]	2[illegible]	4[illegible]	12W	1935	3,4,5	3
Gold [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5W	1948	3,4,5	1
Lakeview [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,4,5	10
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10
BEAVERHEAD RIVER (continued)								
Lemhi Pass	13E01	7480	9	10S	15W	1948	3,4	1
Lemhi Ridge	13E23	8100	4	10S	15W	1967	3,4	1
Trail Creek	13E02	7090	15	10S	15W	1948	3,4	1
White Pine Ridge	12E01	8850	18	14S	9W	1948	3,4,5	1
RUBY RIVER								
Branham Lakes	11D14	8850	5	4S	3W	1967	3,4,5	1,12
Clover Meadow	11D08	8600	28	9S	2W	1963	3,4,5	1
Divide	12E07	7900	14	12S	4W	1963	3,4,5	1
Middle Mill Creek	11D15	7850	17	4S	3W	1967	3,4,5	1,12
Notch	12E06	8500	18	11S	4W	1963	3,4,5	1
Smuggler Mine	12D05	6960	24	4S	3W	1967	3,4,5	1,12
BIG HOLE RIVER								
Abundance Lake	13D20	8800	7	3S	11W	1963	3,4,5	1
Calvert Creek	13D26	6450	34	2N	14W	1969	3,4,5	1
Darkhorse Lake	13D19	8600	4	8S	16W	1963	3,4,5	1
Foolhen	13D21	8280	11	1S	13W	1963	3,4,5	1
Jahnke Lake Trail	13D27	7200	24	7S	16W	1969	3,4,5	1
Mudd Lake	13D25	7650	24	2N	15W	1969	3,4,5	1
Palisade Creek	13D23	8250	3	2N	15W	1967	4,5	1
Slag-A-Melt Lake	13D24	8750	29	5S	17W	1968	3,4,5	1
JEFFERSON RIVER								
Berry Meadow	12C07	7300	8	5N	5W	1962	3,4,5	1
Copper Mountain	12C09	7700	13	3N	7W	1966	2,3,4,5,5½	4
Nez Perce Creek	12C10	6500	16	4N	6W	1967	2,3,4,5	4
Picnic Grounds	12C06	6500	21	5N	6W	1941	2,3,4	4
Pipestone Pass	12D01	7200	10	1N	7W	1938	1,2,3,4,5	1
Rocker Peak	12C11	8000	17	7N	5W	1968	1,2,3,4,5	1
Uncle Sam Gulch	12C12	6500	32	7N	5W	1968	3,4,5	1
MADISON RIVER								
Call Road	11D07	8050	21	8S	2W	1962	3,4,5	1
Four Mile	11D12	6900	5	4S	2W	1965	3,4,5	1
Hebgen Dam	11E05	6550	22	11S	3E	1934	1,2,3,4,5	3
Jack Creek	11D05	7500	13	6S	1E	1961	3,4	1
Lake Creek	11E22	6100	27	11S	1E	1965	2,3,4,5	2
Lion Mountain	11E28	8760	23	11S	2W	1967	2,3,4,5	2
Lower Twin	11D11	7900	12	4S	3W	1965	3,4,5	1
Madison Plateau	11E31	7750	28	14S	5E	1968	3,4,5	1,2
Meridian Creek	11E23	7000	31	12S	1E	1965	2,3,4,5	2
North Meadow	11D03	7500	24	3S	3W	1961	3,4,5	1
Potomageton Park	11E21	7150	33	10S	3E	1965	3,4,5	2
Sentinel Creek	11E20	8300	17	10S	3E	1965	3,4,5	2
Soap Bogus Divide	11E33	7600	19	11S	1E	1968	3,4,5	2
Tepee Creek	11E24	8000	15	12S	1W	1965	2,3,4,5	2
West Yellowstone	11E07	6700	34	13S	5E	1934	1,2,3,4,5	1,3,6
Whiskey Creek	11E30	6800	19	14S	5E	1967	3,4,5	2
GALLATIN RIVER								
Arch Falls	10D14	7350	3	5S	6E	1963	1,2,3,4,5,5½,6	1
Bear Basin	11D09	8150	9	6S	3E	1963	3,4,5	1
Bridger Bowl	10D15	7250	25	1N	6E	1965	1,2,3,4,5,5½,6	1
Carrot Basin	11E29	9000	18	10S	4E	1967	1,2,3,4,5	2
Devils Slide	10D04	8100	14	5S	6E	1935	1,2,3,4,5,5½,6	1
Hood Meadow	10D03	6600	22	4S	6E	1935	1,2,3,4,5,5½,6	1
Lick Creek	10D13	6860	10	4S	6E	1964	1,2,3,4,5,5½,6	1
Little Park	11D10	7400	22	6S	3E	1963	3,4,5	1
Maynard Creek	10D18	6210	19	1N	7E	1967	1,2,3,4,5,5½,6	1
New World	10D01	6700	24	3S	6E	1939	2,3,4	1
Shower Falls	10D16	8100	14	5S	6E	1966	1,2,3,4,5,5½,6	1
Taylor Peaks	11D13	8500	26	9S	2E	1967	3,4,5	1
Twenty-One Mile	11E06	7150	1	11S	5E	1934	1,2,3,4,5	3
MISSOURI RIVER MAIN STEM								
Bear Paw Ski Area	9A02	5200	21	28N	16E	1967	1,2,3,4,5	7
Boulder Mountain	11C01	7950	1	9N	3E	1963	3,4,5	1
Chessman Reservoir	12C05	6200	2	8N	5W	1936	1,2,3,4,5	3
Deadman Creek	10C09	6450	23	12N	8E	1966	1,2,3,4,5	1
Daisy Peak	10C15	7600	34	11N	11E	1969	3,4,5	2
Eagle Creek	10C13	7000	2	5N	10E	1969	3,4,5	2
Elk Peak	10C07	8000	10	8N	8E	1963	3,4,5	1
Forest Lake	10C14	6400	26	6N	10E	1969	3,4,5	2
Frohner Meadows	13C13	6500	23	8N	5W	1971	1,2,3,4,5	1
Grasshopper	10C02	7000	19	9N	8E	1938	3,4,5	1
Haymaker	10C11	8050	16	11N	12E	1969	3,4,5	2
Johnson Park	10C12	6450	16	10N	11E	1969	3,4,5	2
Kings Hill	10C01	7500	34	13N	8E	1934	3,4,5,5½,6	1,3
Rocky Boy	9A01	4700	22	28N	16E	1941	1,2,3,4,5	7
Stemple Pass	12C01	6600	16	13N	7W	1934	3,4,5	3
Ten Mile Lower	12C02	6600	12	8N	6W	1935	1,2,3,4,5	3
Ten Mile Middle	12C03	6800	13	8N	6W	1934	1,2,3,4,5	3
Ten Mile Upper	12C04	8000	19	8N	5W	1935	1,2,3,4,5	3
SUN-TETON- MARIAS RIVERS								
Badger Pass	13A15	6900	4	27N	11W	1964	1,2,3,4,5	1
Blue Lake	13A20	5900	25	28N	11W	1969	1,2,3,4,5	1
Cabin Creek	12B06	5200	33	23N	10W	1949	3,4,5	2
Five-Bull	12B09	5700	25	20N	10W	1948	3,4,5	1
Freight Creek	12A01	6000	13	26N	10W	1948	3,4,5	1
Goat Mountain	12B07	7000	20	22N	10W	1934	3,4,5	3
Mount Lockhart	12B12	6400	18	25N	9W	1969	3,4,5	2
Waldron	12B13	5600	17	25N	9W	1969	3,4,5	2
Wrong Creek	12B04	5700	32	25N	10W	1949	3,4,5	2
Wrong Ridge	12B03	6800	17	25N	10W	1949	3,4,5	2
JUDITH RIVER								
Avalanche	9C02	7100	24	12N	17E	1966	3,4,5	1
Crystal Lake	9C01	6100	19	12N	18E	1941	3,4,5	1
Rock Creek	9C03	5600	8	12N	18E	1966	3,4,5	1
Spur Park	10C06	8000	20	12N	9E	1963	1,2,3,4,5,5½,6	1
UPPER YELLOWSTONE RIVER								
Bald Ridge	10C05	7500	11	4N	10E	1961	3,4,5	1
Camp Senia	9D01	7890	2	8S	18E	1937	3,4,5,5½,6	1
Cooke Station	9D07	8150	19	9S	15E	1966	3,4,5,5½,6	1,2
Crevice Mountain	10D03	8600	27	9S	9E	1935	3,4	2
Fisher Creek	9D06	9100	1	9S	14E	1966	3,4,5,5½,6	1,2
UPPER YELLOWSTONE RIVER (continued)								
Grizzly Peak	9D05	8400	26	7S	19E	1961	1,2,3,4,5	1,2
Independence	10D06	7850	21	7S	12E	1960	3,4,5	1
Mill Creek	10D19	7500	6	7S	11E	1967	3,4,5	2
Monument Peak	10D12	8800	16	7S	12E	1961	3,4,5	1
Northeast Entrance	10D07	7400	33	9S	14E	1937	1,2,3,4,5,5½,6	1,6
Porcupine R.S.	10C03	6500	10	4N	10E	1938	3,4,5	1
Sacajawea	10D10	6550	36	2N	6E	1960	3,4,5	1
South Fork Shields	10C08	8100	13	4N	10E	1965	3,4,5	1
Timberline Creek	9D04	8850	10	8S	18E	1961	3,4,5,5½,6	1
West Rosebud	9D02	7500	9	7S	16E	1960	3,4	4
White Mill	9D08	8700	18	9S	15E	1966	3,4,5,5½,6	1,2

SOIL MOISTURE STATIONS

Drainage Basin & Station	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
Baree Trail	15B15M	3800	5	25N	30W	1964	Monthly	2
Murphy Lake R.S.	14A10M	3000	5	34N	25W	1964	Monthly	2
Raven R.S.	15A02M	3050	2	26N	29W	1964	Monthly	2
FLATHEAD RIVER								
Desert Mountain	13A02M	5600	24	31N	19W	1956	Monthly	1
Marias Pass	13A05M	5250	34	30N	14W	1950	Monthly	6
CLARK FORK RIVER								
Black Pine	13C13M	7100	26	8N	15W	1965	Monthly	1
Seeley Lake	13B19M	4030	21	17N	15W	1963	Monthly	2
Skalkaho Summit	13C03M	7260	30	6N	17W	1964	Monthly	1
BITTERROOT RIVER								
Gibbons Pass	13D18M	7100	4	2S	19W	1962	Monthly	1
Lolo Pass	14C05M	5250	11	10N	24W	1963	Monthly	1
MISSOURI RIVER BASIN								
BEAVERHEAD RIVER								
Lakeview	11E13M	6700	23	14S	2W	1962	Monthly	10
MADISON RIVER								
West Yellowstone	11E07M	6700	34	13S	5N	1966	Monthly	6
GALLATINE RIVER								
Bridger Bowl	10D15M	7250	25	1N	6E	1966	Monthly	1
College Site	11D02M	4856	18	2S	5E	1956	Monthly	1
Lick Creek	10D13M	6860	10	4S	6E	1965	Monthly	1
Twenty-One Mile	11E06M	7150	1	11S	5E	1963	Monthly	6
MISSOURI RIVER MAIN STEM								
Kings Hill	10C01M	7420	34	13E	8E	1963	Monthly	1
Stemple Pass	12C08M	6350	16	13N	7W	1963	Monthly	1
MILK RIVER								
Beaver Creek	9A05M	3950	21	29N	16E	1969	Monthly	1
Rocky Boy	9A01M	3950	21	29N	16E	1969	Monthly	1
YELLOWSTONE RIVER								
Battle Ridge	10D11M	6020	32	2N	7E	1960	Monthly	1
Northeast Entrance	10D07M	7350	33	9S	14E	1962	Monthly	6

LEGEND

1/ Numerals 1,2,3,4,5,5½,6 refer to January 1, February 1, March 1, April 1, May 1, May 15 and June 1.

2/ Numerals refer to Agency that makes the snow survey as follows:

1. U. S. Soil Conservation Service
2. U. S. Forest Service
3. U. S. Geological Survey
4. Montana Power Company
5. U. S. Indian Service
6. U. S. National Park Service
7. MSU Agricultural Experiment Station
8. U. of M. School of Forestry
9. Department of Energy, Mines & Resources
10. U. S. Bureau of Sport Fisheries & Wildlife
11. Private Cooperator
12. Soil and Water Conservation District

Agencies and Organizations Cooperating in Montana Snow Surveys

U. S. Forest Service
Region 1, Missoula, Montana
Montana Forests and Ranger Districts

U. S. Geological Survey
Helena, Montana
Portland, Oregon

U. S. Army Corps of Engineers
Portland, Oregon
Seattle, Washington
Walla Walla, Washington
Omaha, Nebraska

U. S. Indian Irrigation Service
St. Ignatius, Montana

U. S. Weather Bureau
Helena, Montana
Portland, Oregon
Kansas City, Missouri

U. S. Bureau of Sports Fisheries and Wildlife
Red Rock Lakes Refuge
Monida, Montana

U. S. Bureau of Reclamation
Billings, Montana
Boise, Idaho

U. S. Bonneville Power Administration
Portland, Oregon

U. S. Soil Conservation Service
Montana, Wyoming, Idaho

Soil and Water Conservation Districts
Montana Counties

U. S. National Park Service
Yellowstone National Park
Glacier National Park

Montana Power Company
Butte, Montana

Montana Water Resources Board
Helena, Montana

North Montana Branch Station
Agricultural Experiment Station
Havre, Montana

Montana State University
Agricultural Experiment Station
Bozeman, Montana

University of Montana
School of Forestry
Missoula, Montana

Water Rights Branch, Dept. of Lands and Forests
Victoria, British Columbia

Department of Energy, Mines and Resources
Calgary, Alberta

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